

DESCRIPTION OF ADULT AND LARVAL STAGES OF A NEW SPECIES
OF CRYPTORHOPALUM FROM ARIZONA AND MEXICO
(COLEOPTERA: DERMESTIDAE)

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ABSTRACT—Larval and adult stages of a new species of dermestid beetle from Arizona, and Mexico, *Cryptorhopalum poorei*, are described. Characters distinguishing larvae of the genus from larvae of other genera of Anthreninae are discussed.

Adults of species of *Cryptorhopalum* are often taken in abundance on flowers throughout most of the United States. Nevertheless, habitats of the larvae have not previously been known and no description has been given for larvae of any Nearctic species. Rees (1943) described the larva of the Neotropical *Cryptorhopalum dubium* Sharp, but the description seems inadequate for distinguishing larvae of the genus from those of related genera. Probably larvae of a number of species have been taken and are present in collections together with useful biological notes, but because they superficially resemble larvae of *Anthrenus*, their identity has gone unnoticed. It is hoped that the following description and discussion of larval characters will provide a basis for further investigations into the biology of this common but little known group.

Cryptorhopalum poorei Beal, new species¹

Adult male: Dorsal facies as illustrated (fig. 1A). Dorsal pubescence recumbent, consisting of brownish-black and yellowish-white to white hairs distributed as shown; hairs on lateral margins of pronotum about as long as length of scutellum; hairs on elytra $\frac{3}{5}$ to $\frac{4}{5}$ as long as length of scutellum. Head with integument black; frons and vertex with shallow punctures about as wide as twice width of facet of eye and separated by $\frac{1}{4}$ to $\frac{1}{2}$ diameter of puncture. Antennal club entirely black; ratio of width to length of 10th segment 1 : 1.22; ratio of length of 11th segment to 10th segment 1 : 1.23. Pronotum with integument black; punctures of disc minute, slightly less wide than width of facet of eye and separated by 3 to 5 times width of puncture. Integument of elytra black at base becoming mahogany brown posteriorly with nebulous light reddish-brown maculae beneath areas of light colored pubescence. Ventral surfaces with recumbent white hairs except for dark golden-brown hairs on lateral margins of abdominal segments and apex of last (visible) abdominal segment. Antennal fossa at lateroposterior margin reaching posterior margin of hypomeron. Metasternum without diagonal striae. First (visible) abdominal sternum with 2 fine striae on each side extending diagonally from inner margin of coxae half way to posterior

¹ Named for Henry W. Poore, M. D., of Flagstaff, Arizona, in recognition of the time and effort he has given through the Explorer program of the Boy Scouts of America to the biomedical education of youth of the community.

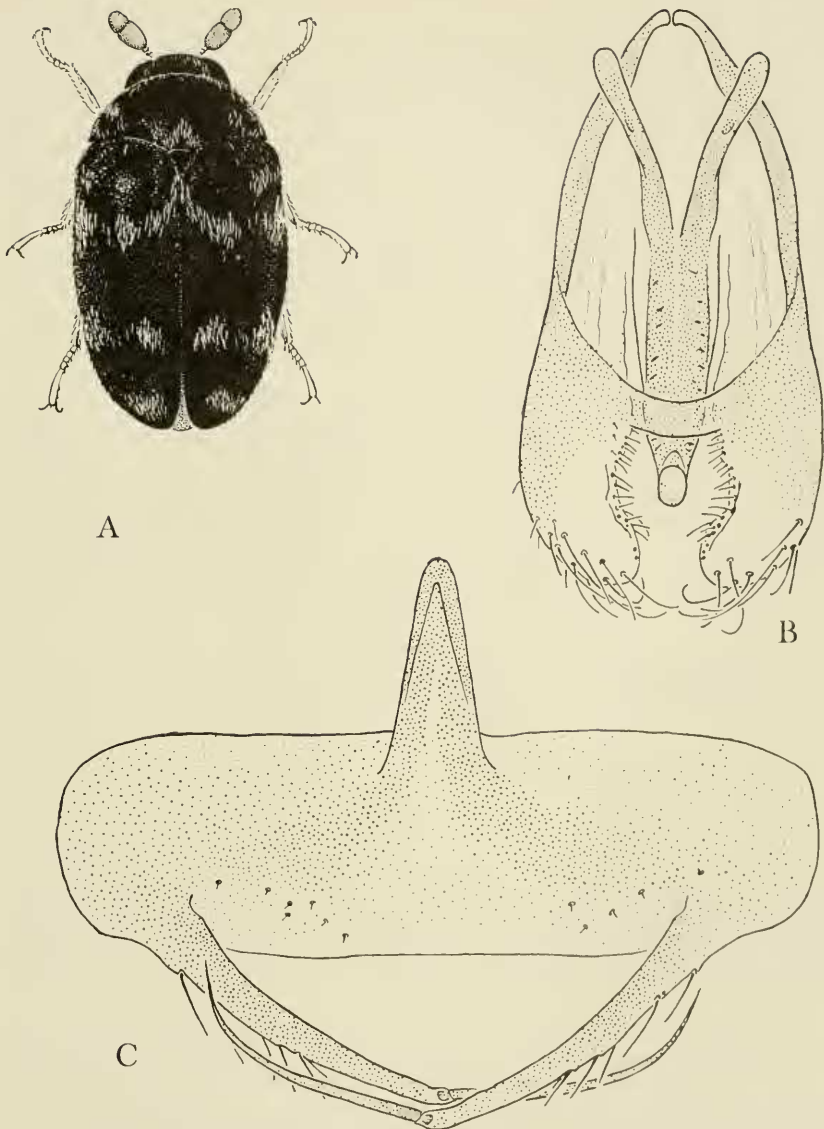


Fig. 1. *Cryptorhopalum poorci*. A, adult male. B, aedeagus and lateral lobes. C, eighth (morphological) sternum.

margin of segment. Front tibia not expanded at apex. Eighth (morphological) sternum as illustrated (fig. 1C). Aedeagus and lateral lobes as illustrated (fig. 1B). Length of pronotum and clytra combined: 2.8 mm ratio of width (across humeri) to length: 1 : 1.70.

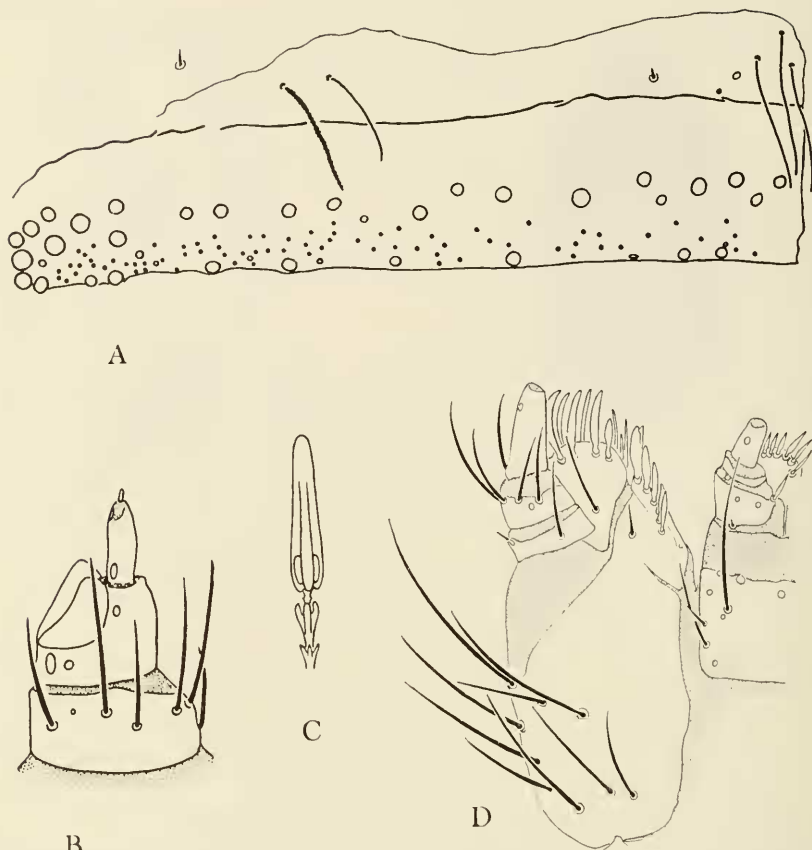


Fig. 2. Larval structures of *C. poorei*. A, left half of first abdominal segment, mostly denuded. Open circles represent sockets of spicisetae, size of socket roughly proportional to size of seta; dots represent points of insertion of hastisetae; acrotergite shown with position and lengths of fine spicisetae. B, antenna. C, head of hastiseta from first abdominal segment. D, ventral aspect of maxilla and labium.

Adult female: Similar to male except as follows: antennal club dark brown, $\frac{3}{14}$ as long as lateral margin of pronotum. Antennal fossa $\frac{3}{7}$ as long as lateral margin of pronotum. Integument of dorsal surfaces entirely mahogany brown except for elytral maculae. Fifth (visible) abdominal sternum with 2 minutely and densely punctate, subcircular, glabrous spots, each in diameter about $\frac{2}{3}$ length of sternum. Length: 3.3 mm. Ratio of width (across humeri) to length: 1 : 1.79.

Range of observed variations: Dorsal integument entirely black without maculae to dark brown with ochreous maculae. Ratio of width to length of male antennal segment 10 varying from 1 : 1.15 to 1 : 1.30; ratio of length of segment 10 to length of segment 11 varying from 1 : 1.23 to 1 : 1.34. Color of female

antennal club varying from dark brown to black. Length of males varying from 2.5 mm to 3.0 mm.

Mature larva: Integument of head, nota, and terga fuscous, sterna hyaline, coxae fuscous, femora and tibiae yellowish. All setae light golden-brown; hastisetae (spear-headed setae) with shape of head as illustrated (fig. 2C); shaft of longest hastiseta about 0.84 times as long as length of pronotum. Length of longest terminal spiciseta (rat-tailed or spinulate setae) about $7\frac{1}{2}$ times as long as length of pronotum. Middle setal series of labro-epipharyngeal margin with slender setae only; outer setae subequal in width to inner setae. Epipharynx with 6 distal sensory papillae in single, compact, sharply defined group, a median pair of sensory cups, and a proximal transverse series of 12 to 16 sensory cups; epipharyngeal rods narrow and slightly curved. Frons without median tubercle. Antenna as illustrated (fig. 2B). Ventral side of maxilla and labium as illustrated (fig. 2D); dorsal (inner) side of galea of maxilla with numerous recurved setae at apex. Setal patterns of 1st abdominal tergum as illustrated (fig. 2A). Dense brush of hastisetae inserted on membrane behind 7th tergum; in resting position membrane withdrawn beneath tergum so that brush of hastisetae directed posteriorly; no hastisetae inserted on intersegmental membranes behind other terga. Antecostal suture present on 7th tergum, absent on 8th. Ninth tergum reduced to small, crescent-shaped, vertically positioned plate bearing caudal brush of spicisetae. Ratio of length of mesosternal femur to width of pronotum 1 : 2.69. Ratio of length of tibia to length of femur 1 : 1.16. Anterior pretarsal seta on each leg $\frac{1}{2}$ as long as pretarsus; posterior pretarsal seta $\frac{1}{5}$ as long as anterior pretarsal seta.

Holotype male: 23 miles north of Flagstaff, Arizona, collected as larva March 16, 1968, and emerged as adult April 8, 1968, R. S. Beal; deposited in the collection of the California Academy of Sciences.

Allotype female: Santa Catalina Mts., Arizona, June 10, 1938, O. Bryant; deposited in the collection of the California Academy of Sciences.

Paratypes: ARIZONA: T. 19 N., R. 5 E., Coconino Co., as larvae Dec. 21, 1969, reared April and June, 1970, 2 males, R. S. Beal; Schultz Pass, San Francisco Mts., Coconino Co., 8,200 ft. elev., as larva Nov. 25, 1971, R. S. Beal; Hart Prairie, San Francisco Mts., Coconino Co., 8,600 ft. elev., 2 skin casts, R. S. Beal; "Graham Mts." (Pinaleno Mts.), Graham Co., July 6, 1955, one female, Ordway and Statham; Chiricahua Mts., Cochise Co., June 23, 1933, one female (tentatively assigned here; specimen badly abraded), O. Bryant; Santa Catalina Mts., Pima Co., 7,000 ft. elev., June 11, 1961, one male, R. S. Beal. MEXICO: (vicinity of) Durango, 9,300 ft. elev., June 3-5, 1937, Juan Manuel (Van Dyke Collection) (Parts of label illegible). Paratypes in collections of the California Academy of Sciences, the U. S. National Museum, the American Museum of Natural History, and the author.

DIAGNOSIS

The species seems to be most closely associated with a group that includes *C. haemorrhoidale* (LeConte) and *C. balteatum* LeConte. Each member of this group has 2 appendage-like projections on the 8th (morphological) sternum of the adult male. A large seta inserted at the apex of each projection creates the appearance of a jointed appendage (fig. 1C). The 8th segment forms part of the genital

tube and is recessed within the abdomen except during copulation. Males of the group have in common a broad rather than narrow "bridge" on the lateral lobes (fig. 1B). Females of the group have 2, round, glabrous areas on the 5th (visible) sternum. *Cryptorhopalum poorei* is distinguished from members within the group by the subcylindrical shape of the antennal club of the male. The other Nearctic members of the group have an ovate instead of subcylindrical antennal club. The antennal club of *C. poorei* is somewhat similar to the form found in *C. triste* LeConte, *C. uteanum* Casey, and *C. apicale* Mannerheim. However, the pattern of dorsal pubescence readily distinguishes it from these 3 species. These and other species of *Cryptorhopalum* with a similar subcylindrical antennal club either have entirely black dorsal pubescence or lack 3 distinct bands of light-colored pubescence on the elytra. The light-colored pubescence on the elytra of *C. poorei* forms 3 rather distinct bands, but there are usually no light-colored hairs at the base. One specimen collected has a few light-colored hairs along the base, but these do not form a distinct band, whereas there is a strongly pronounced band at the basal 3rd.

Larvae of *Cryptorhopalum* can be distinguished from larvae of most other Nearctic genera within the Anthreninae by the presence of a dense brush of hastisetae arising from the membrane behind the 7th abdominal tergum but the absence of a similar brush of hastisetae on the membrane behind the tergum of any other segment. In contrast to this, *Trogoderma*, *Reesa*, *Megatoma*, *Pseudohadrotoma*, and the Palearctic *Globicornis* have no hastisetae inserted on the membrane behind any of the terga; all of the hastisetal tufts are inserted on the sclerotized tergites. A different condition is found in *Anthrenus*, which has tufts of hastisetae inserted on the membrane behind the terga of the 5th and 6th abdominal segments as well as the 7th. *Ctesias* has tufts of hastisetae inserted on the membrane behind the terga on abdominal segments 4-7 (Rees, 1943). Among known larvae of Nearctic genera, only *Thaumaglossa* has tufts of hastisetae inserted on the membrane behind the 7th abdominal tergum only, as in *Cryptorhopalum*. Larvae of *Cryptorhopalum* are easily distinguished from those of *Thaumaglossa* in that the spicisetae near the middle of each notum and tergum of *Cryptorhopalum* are relatively short, seldom longer than $\frac{1}{8}$ the total width of the tergum or notum. The spicisetae near the middle of each notum and tergum of *Thaumaglossa* are exceptionally long, some longer than $\frac{1}{2}$ the width of the segment. Further, the accessory papilla on the 2nd antennal segment of *Cryptorhopalum* is broad and extends from below the middle of the segment to the apex (fig. 2B). The accessory papilla on the 2nd antennal segment of *Thaumaglossa* is peglike, about $\frac{1}{2}$ the diameter of the 3rd segment, and situated entirely at the apex of the segment. The larva of the Hawaiian *Labrocerus* also has a tuft of hastisetae inserted on

the membrane behind the 7th abdominal segment only, as in *Cryptorhopalum*. Larvae of *C. poorei* differ from the 3 species of *Labrocerus* studied in having fine spicisetae inserted on the acrotergites of the abdominal segments and in having the 2 pretarsal setae subequal. In *Labrocerus* there are no spicisetae inserted on the acrotergites and 1 of the pretarsal setae is less than $\frac{1}{2}$ as long as the other.

The larva of an unidentified species of *Cryptorhopalum* from Panama is the only 1 that has been available for comparison with *C. poorei* with respect to characters at the specific level. Apparently the pattern of setation of the pronotum, the number of setae on different segments of the maxilla, and the color of the integument are useful in distinguishing the species.

BIOLOGY

The species occurs in montane areas of the Southwest at elevations of 7,000 feet or higher, occurs in the state of Durango, Mexico, and probably will be found at higher elevations along the entire Sierra Madre Occidental. The larvae have been found under moderately loose bark of standing dead *Pinus ponderosa*. Efforts to find the larvae under bark of fallen trees and under the bark of other trees have proved fruitless. In each instance except one, the larvae were associated with spider webbing under the bark, and in that one instance they were found under bark about 6 inches from spider webbing. One cast skin was found within a spider egg case. However, a partially eaten cast skin of *Megatoma cylindrica* was also found within the case, indicating that the *C. poorei* larva was not the 1st intruder. Invariably the larvae were found only under bark where there was enough moisture present to support Collembola in moderate abundance. No information is available on the habits of the adults.

REFERENCE

- Rees, B. E. 1943. Classification of the Dermestidae (larder, hide, and carpet beetles) based on larval characters, with a key to the North American genera. U. S. Dept. Agr. Misc. Pub. No. 511, pp. 1-18.